

REMARKS

Claims 1, 2, 4-8, 10-17, 19-23 and 56-73 are pending in the application and are currently rejected. Claim 23 has been amended. Claim 21 has been cancelled. In light of the amendments and remarks herein, reconsideration of claims 1, 2, 4-8, 10-17, 19-20, 22-23 and 56-73 is respectfully requested.

Amendments to the Claims

Applicants believe that the previously presented claims are patentable over all of the art cited in the Office Action as well as all other references submitted by Applicants. Therefore, the Applicants have not amended the claims. The Applicant's gratefully acknowledge the Examiner's determination that claims 15 and 73 are allowed and that claim 23 is allowable if rewritten in independent form.

Claim Rejections under 35 U.S.C. § 103

Claims 1, 2, 4, 5, 8, 10-14, 19, 20, 22 and 56-72

Claims 1, 2, 4-8, 10-14, 16-17, 19-20, 22 and 56-72 stand rejected under 35 U.S.C. §103(a) as being unpatentable over German Patent G 91 02 407.2 to Mink ("Mink") in view of U.S. Patent 5,835,648 to Narcisco et al ("Narcisco"). All of the rejected claims, however, are patentable, because Mink in combination with Narcisco does not include all elements recited in the claims.

Each of the rejected independent claims share a similar characteristic, i.e., at least a portion of the radiation does not pass unless the apparatus is in contact with a surface such as, for example, skin. The rejected independent claims are summarized as follows.

- Independent claim 1 is directed to an apparatus for treating the skin, comprising an applicator having at least one protuberance comprising a skin-contacting surface, and at least one optical radiation source. The apparatus also includes a total internal reflection mechanism *to prevent a portion of the radiation from passing through said skin-contacting surface unless in contact with the skin.*

- Independent claim 10 is directed to an apparatus for treating the skin, wherein “a skin contacting end of each protuberance has total internal reflection for the radiation when not in contact with the skin, but *passes radiation to the skin when in contact therewith.*”
- Independent claim 61 is directed to an applicator having at least one protuberance comprising a skin-contacting surface. The applicator includes “a total internal reflection mechanism coupled to said skin-contacting surface to prevent at least a portion of the radiation from passing through said skin-contacting surface *unless in contact with a surface* having an index of refraction approximately greater than or equal to the index of refraction of the skin contacting surface.”
- Independent claim 68 is directed to an apparatus for treating skin using an optical radiation source, “wherein at least a portion of the radiation passes to the skin *only when the surface contacts the skin.*”

As the examiner notes, Mink does not teach total internal reflection. Neither does Narcisco. Narcisco discloses a “device for delivering phototherapeutic light to uniformly illuminate a tissue surface.” (Narcisco, abstract.) “The device is a bowl-shaped shell with a more-or-less parabolic profile and having an open end and an apex.” (*Id.*) An optical fiber 16 is attached near the apex 11a. (Narcisco, col. 3; lines 17-34.) To uniformly illuminate the tissue surface, the device is designed so that “60% or more of the light 18 out of the optical fiber 16 interacts with the inner surface 12 of the shell prior to reaching the skin 15 or other tissue.” (Narcisco col. 3 lines 60-63.) The Examiner states that the device of Narcisco teaches the concept of controlling the delivery of radiation based on the difference in the index of refraction between the tissue and the medium directly in contact with the tissue through which the treatment light must first pass to reach the tissue. (Office Action at 3 citing Narcisco col. 1 lines 40-50). While the cited teaching references the index of refraction, it does not constitute a total internal reflection mechanism. The light that Narcisco discusses in the cited passage is reflected light that has left the device and is incident on the skin. According to Narcisco, a portion of that light will be reflected back from the tissue surface toward the device while a portion penetrates the tissue. (See, e.g., Narcisco col. 1 lines 45-49; col. 3 48-59.) However, there is no disclosure in Narcisco of a mechanism that prevents radiation from exiting the device when the device is not in contact with skin or other tissue based on total internal reflection.

In contrast, the total internal reflection mechanisms of claims 1, 10, 61 and 68, for example, prevent at least a portion of the radiation from passing through said skin-contacting surface unless in contact with skin as in claim 1. Similarly, as recited in claim 61, the total internal reflection mechanism prevents at least a portion of the radiation from passing through said skin-contacting surface unless in contact with a surface having an index of refraction approximately greater than or equal to the index of refraction of the skin contacting surface.

Furthermore, there is no reason to combine Mink with U.S. Patent 6,273,884 to Altshuler et al. (herein "Altshuler"). For example, Mink appears to show in figures 2 and 3 bristles having hollow cylindrical channels used to conduct light from an array of light sources, and the Applicants are unable to discern any stated rationale or benefit from restraining radiation when the device is not in contact with the tissue to be treated. Thus, it appears that Mink's hairbrush has a fundamentally different principle of operation from the devices of Altshuler. While Altshuler discloses, for example, embodiments that include solid protuberances through which the radiation passes, Mink does not appear to disclose such a mechanism of operation. Instead, the light in Mink appears to pass through empty space. Thus, there would be no obvious reason or mechanism to provide a device having total internal reflection as claimed in the present application.

Without modifying the fundamental operation of Mink, there would be no reason to apply the teachings of Altshuler. As discussed in the Manual of Patent Examining Procedure §2143.02 Section VI, "[i]f the proposed modification or combination of prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." Adding the total internal reflection mechanism recited in claims 1, 10, 61 and 68 would change the principle of operation of the hairbrush disclosed in Mink. Accordingly, Mink cannot be combined with Altshuler to render amended claim 1 obvious.

Claims 2, 4-8, 11-14, 16-17, 19-20, 22 and 56-60, 62-67 and 69-72 all depend from one of claims 1, 10, 61 and 68, and are thus patentable over the cited art for at least the same reasons that claims 1, 10, 61 and 68 are patentable. Accordingly, Claims 1, 2, 4-8, 10-14, 16-17, 19-20,

22 and 56-72 are novel and patentable over Mink in combination with either Narcisco or Altshuler.

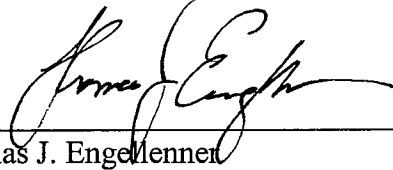
CONCLUSION

In summary, the above-identified patent application has been amended and reconsideration is respectfully requested for all the reasons set forth above. In the event that the Examiner deems that the amendments and remarks do not overcome the stated grounds for rejection, the Applicants kindly request that the Examiner telephone the undersigned representative to discuss any remaining issues.

Respectfully submitted,

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